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BULLETIN
OF THE
TORREY BOTANICAL CLUB

JUNE, 1922

Mycological notes for 1920*

L. O. OVERHOLTS

(WITH PLATE 9 AND FOURTEEN TEXT FIGURES)

I. ZYTHIA RESINAE (Ehrenb.) Karst.

For several years there has been noted in the mountains near State College a small inconspicuous fungus always confined to resin exudate on species of two- and three-needle pines. It has been found especially abundant in the vicinity of Charter Oak and Greenwood Furnace, Pennsylvania. Its habitat is the resin mass inhabited by the larvae of the "pitch midge," *Cecidomyia resinicola* Osten-Sacken. The origin of the resin exudate has not been studied by the writer, but E. P. Felt† states (on the authority of Miss L. S. Eckel) that the resin flow from the tree is not the result of an injury caused by the midges, but that they "take advantage of normal exudations of resin on which to oviposit," although "the flow of this substance may be increased to some extent by the larvae rasping the living tissues." At any rate the final resin masses are subglobose or depressed globose and 1.5–2.5 cm. in diameter (PLATE 9, FIG. 2). They may occur on one side of the limb only, as stated and illustrated by Felt, or the exudate may entirely encircle the limb, though I have seen no instances of the saccate type of resin mass illustrated by Felt. These masses are in

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†N. Y. State Mus. Memoir 8: 410–412. 1906.

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all cases found near the ends of the branches and always at the forks of the twigs.

Eventually the fungus produces its pycnidia on this hardened and blackened resin mass. These are minute elongate-ovoid or almost conical bodies (PLATE, 9, FIG. 1, at left), yellow or amber-colored, and large enough to be easily visible, on close inspection, to the unaided eye. The ostiole is usually quite prominent, and may often be seen with a hand lens. In texture the pycnidia are waxy and easily crushed when mounted in water. The spores are globose, smooth, hyaline, and very small, measuring only about $2\ \mu$ in diameter.

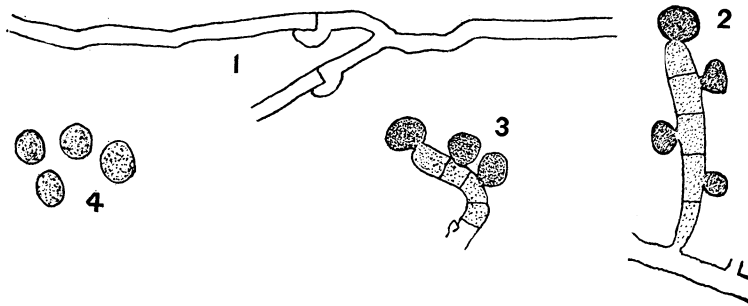
The nature of the pycnidium places the fungus in the Nectrioidaceae of the Fungi Imperfecti. After several unsuccessful attempts at identification, the species was determined for me as *Zythia resinae* by Mrs. F. W. Patterson, who wrote that my specimens represented the only American material she had seen. Later Dr. Seaver identified my plants as being the conidial stage of *Nectriella resinae* (Fr.) Sacc., as listed by Saccardo. *Nectriella* is a genus of the true Nectriaceae, order Hypocreales, and consequently with an ascus in the life history. Examination of material collected at various times over a period of several years has failed to show on the same substratum any ascospore-producing structure comparable to the perithecium of a *Nectriella*. There is produced, however, on the same resin masses that bear the pycnidia an apothecial fructification that has been referred to *Biatorella resinae* (Fr.) Mudd., as listed below.

2. BIATORELLA RESINAE (Fr.) Mudd.

In company with *Zythia resinae*, as described above, there frequently grows an apothecial fruiting body that was determined as *Biatorella resinae* by Dr. L. W. Riddle, to whom my specimens were sent by Dr. Seaver. The very small apothecia are about 1 mm. in diameter and yellowish or amber-colored (PLATE 9, FIG. 1, at right). They have been collected on resin exudate inhabited by the larvae of the "pitch midge" on *Pinus virginiana* at Charter Oak and on *P. ponderosa* at Greenwood Furnace. The curious habitat and the frequent association of these apothecia with the pycnidia of the *Zythia* suggest a connection between the two, but if the *Zythia* is the pycnidial stage of the *Nectriella* such could hardly be the case.

3. PILACRE PETERSII B. & Br.

This rare species was found for the first time in the writer's experience on a dead snag of *Acer rubrum*, July 1, 1920, on Stone Creek, Huntingdon County, Pennsylvania. Hundreds of the small brown stipitate fruiting heads were present on a small area (PLATE 9, FIG. 4), and their abundance suggested that this species is probably not so rare as has been supposed but, because of its small size and inconspicuous coloration, is usually



FIGS. 1-4. PILACRE PETERSII B. & Br.

1. Hyphae with clamp connections. 2 and 3. Basidia with spores.
4. Spores.

overlooked. Cross-septate basidia characteristic of the Auriculariales are always difficult to demonstrate, but the writer has located them with more ease in this species than in any other, though not readily demonstrable at best (TEXT FIGS. 2 and 3). The fungus departs widely in consistency and habit from other members of the order. The following descriptive notes are appended:

Sporophores gregarious on the substratum, sometimes growing from a slight superficial gray mycelium, 2-5 mm. high, consisting of a slender stalk bearing a single subglobose or hemisphaeric head; head 0.5-2.5 mm. in diameter, at first gray-pruinose, then deep brown, covered by a thin membrane that disappears at maturity, filled with a brown spore mass mixed with hyphae and powdery at maturity; spores sessile on the basidia, subglobose, smooth, brown, 5-7.5 μ diameter; basidia transversely three-septate (four-celled), hyaline, straight or curved, produced laterally on somewhat larger hyphae, 15-24 μ long, 2-3 μ in diameter, the terminal cell bearing its spore apically, the other cells each with a lateral spore produced on either side of the basidium if straight, but on the convex surface if curved; hyphae hyaline, then brown, somewhat branched, with cross walls and clamp connections, 2-3 μ in diameter;

stem central, grayish white, 0.2–0.35 mm. in diameter. [TEXT FIGS. 1–4.]

On dead wood of deciduous trees.

4. *TULASNELLA VIOLAE* (Quél.) Boud. & Gal.

The genus *Tulasnella*, recently monographed for this country by Burt, is an anomalous genus, *Corticium*-like in appearance, but hardly so in structure. It is characterized by the presence of large sterigmate-like processes, four in number (usually), that are produced on a basidium-like organ, and that in turn bear each a hyaline spore. Only three species are listed by Burt, all of narrow geographical range and none hitherto reported from Pennsylvania.

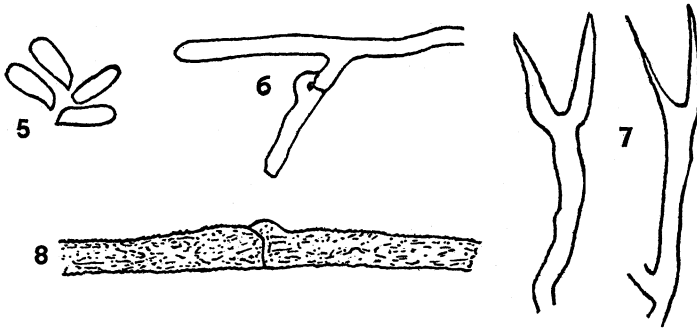
A small collection of *T. Violae* was made in the mountains of Center County, Pennsylvania, on January 29, 1921, on the inside of a gum (*Nyssa sylvatica*) log by the writer's mycology class while on a collecting trip. The discovery of the specimens is credited to Mr. W. A. Kuntz.

The color of these specimens was flesh pink or livid pink (Ridgway) when collected, but it is not probable that they will long retain these colors in the herbarium. In aspect the plants resemble very much a thin species of *Corticium*, and casual observations of free hand sections show nothing very different from sections of species of that genus. Spores were abundant in the collection, however, and it was only when the usual attempt was made to substantiate their connections to basidia that the real nature of the hymenium became apparent. With some difficulty the large clavate or elongate sterigmata were made out, sometimes four in number and sometimes apparently but three. After the development of the sterigmata the basidia appear to collapse, or at least in a spore-bearing condition the group of sterigmata is so large as to give this impression. The spores are broadly ellipsoid to globose, and in these specimens have two or three large conspicuous guttulae. The spores measure 5.5–7.5 x 5 μ . No cystidia are present.

5. *DACRYOMYCES HYALINA* Quél.

The species of the genus *Dacryomyces* are not well known in this country, partly because, in spite of their usually bright colors, they dry down and are rather inconspicuous in dry weather, when collectors are most likely to be in the field. *D. hyalina*, as determined for me by C. G. Lloyd in 1919, was

found for the first time in Pennsylvania on January 29, 1921, on a fallen log of *Pinus Strobus*. The dried plants appear as small scaly growths, dark in color, but when wet they swell up and take on a more waxy appearance and gelatinous texture. Fresh specimens measure 1–2 mm. in diameter, or by confluence as much as 3 mm. The color is a waxy yellow in young specimens, verging to olivaceous or brownish when dried. The fructification is almost disk-shaped, being considerably flattened, and the upper surface may be smooth or thrown into serpentine folds. The hymenium is composed of the usual bifurcate basidia (TEXT FIG. 7), each with two spores. The spores (TEXT FIG. 5) are short-cylindric though often narrowed at one end, hyaline, one-celled, and measure $10-12 \times 3-4 \mu$. The hyphae in



FIGS. 5-8. *DACRYOMYCES HYALINA* Quél.

5. Mature spores. 6. Hypha with clamp connection. 7. Mature basidia. 8. Hypha with scabrous wall and clamp connection.

the trama vary from 4μ to 6μ in diameter and the walls of the larger ones appear scabrous. Branching and anastomoses are common, but cross walls are not abundant. Contrary to the usual condition in the Tremellales and the Dacryomycetales, clamp connections are found on the hyphae, though not abundant. On the older scabrous hyphae they are rather inconspicuous (TEXT FIG. 8) but on the younger hyphae they are not difficult to locate (TEXT FIG. 6).

Good figures of this plant were recently published by Lloyd (Myc. Notes, No. 58, p. 828. 1919), who reports the species from North Carolina. The name employed to designate the species is open to criticism. The plants seem to be specifically distinct from *D. deliquescens*, which they resemble microscopically as to spores and basidia, since the latter seems to lack the large

scabrous-walled hyphae and the clamp connections of *D. hyalinus*. I have not made, for *D. deliquescens*, an exhaustive search for clamp connections, but have failed to find them in the mounts I have made. Neither have I ever seen *D. deliquescens* assume the dark colors on drying, characteristic of the present species.

6. STEREUM RADIATUM Peck

The fourth Pennsylvania collection of this species was made in October 27, 1920, on coniferous boards in the greenhouse at State College. A fifth collection, made in the Ottawa Valley, Canada, by R. J. Blair in 1917, is in my herbarium. Three of these collections were taken from structural coniferous timbers, four of them being from *Tsuga canadensis*. The specific identity of the substratum of the fifth collection was not determined, except that it was recognized as a coniferous host. The first collection, made here in 1915, was determined by Dr. Burt.

The species is one of the easiest of the stereums to recognize. The plants are almost entirely resupinate and the hymenium is in all collections a uniform cinnamon brown or Sudan brown, except that where the fresh specimens are wounded on the hymenium they immediately turn black and remain so on drying. The hymenial surface is radiately lined with obtuse ribs in all cases. The pileus where developed is black on top in dried specimens and usually decidedly rugose.

Spores have not been certainly seen; in one specimen, however, small rounded hyaline spore-like bodies, 4-5 μ in diameter, were present on the hymenium but were not seen attached to basidia. No cystidia are present. Sections of the hymenium sometimes become pea green in KOH solution.

7. MERULIUS FUGAX Fr.

This rare and interesting species was collected on a coniferous board in the greenhouse at the Pennsylvania State College, on October 26, 1920. It is a bright colored species, my field notes recording a salmon buff color, varying to pinkish cinnamon for the hymenial surface, and with the margin considerably lighter. The specimen was rather young and the gyrose-plicate hymenium was developed only in the center of the fructification. The plant is separable from the substratum when fresh but as soon as it becomes dry it adheres tightly, although the fructification is quite membranous in that condition. Microscopic examination of sections through it shows the character-

istic features of the species, which are the oblong-ellipsoidal to subglobose spores and the large conspicuously incrustated hyphae of the subhymenium next the substratum. These hyphae are 4-6 μ in diameter and possess both cross walls and clamps. The spores under the microscope are all but hyaline, although the species is included among the *Leptospori* by Dr. Burt, who states that they sometimes appear slightly yellowish. No cystidia are present.

Merulius subaurantiacus Peck is recorded as a synonym by Dr. Burt, and my sections of the type of that species show structures identical with those of *M. fugax*, except that no incrustated hyphae are present next the substratum. Apparently no other species described from America has similar spores.

8. SOLENIA FASCICULATA (Pers.) Fr.

Plants rather crowded on decorticated wood, consisting of isolated cylinders not more than 1 mm. high and 0.2 mm. thick, whitish or slightly brownish, externally compactly tomentose; hymenium lining the hollow cylinders, of clavate basidia without cystidia; spores not seen attached to basidia but free-floating, hyaline, thin-walled, and 5-7 μ in diameter.

On coniferous wood. Reitz Gap, Center County, Pennsylvania, September 20, 1920, *J. F. Adams*.

According to C. G. Lloyd, who made the determination, *S. villosa* Fr. is probably the same species. These specimens depart from the available descriptions of *S. fasciculata*, which call for a plant 2-7 mm. high. The plants under the hand lens (PLATE 9, FIG. 3), resemble a simple *Mucronella* in which genus, however, the basidia are external.

9. POLYPORUS CAERULOPORUS Peck

Collected on the banks of Stone Creek, Huntingdon County, Pennsylvania, July 9, 1920.

A rare species, listed by Murrill as occurring in New England and New York. The uniform pale indigo-blue color of cap, tubes, and stem is unique among the pore fungi. A single specimen was collected, from which the following notes were made:

Plant stipitate, more or less uniformly pale indigo-blue; pileus nearly orbicular, 4.5 x 3.5 x 0.3-0.7 cm., smoky indigo, glabrous, dry, slightly rugose; margin lobed, deflexed; context white, 1-5 mm. thick, taste mild; tubes about 2 mm. long, pale blue within, the mouths pale indigo-blue, angular, thin-walled, entire, averaging two per mm., decurrent on the stem,

not separable from the context; stem excentric, nearly lateral, deep indigo-blue, pallid within, glabrous, 2.5 cm. long, 0.5 cm. thick; spores subglobose, hyaline, 4-5 μ in diameter; cystidia none.

The dried plant is dark bluish black on the pileus and stem, and the hymenium has become brown.

10. **Polyporus compactus** sp. nov.

Plants resupinate to narrowly reflexed or cushion-shaped, the pileus not more than 1 cm. broad, and 1.5 cm. thick, in resupinate condition 3-8 mm. thick, white or gray in color, corky-watery when fresh, firm and compact when dry, glabrous or practically so, the margin rounded and obtuse; context light wood color, friable but compact when dry, taste mild; tubes oblique, less than 2 mm. long, often lacking or poorly developed, the mouths subcircular, averaging three or four per mm., white; dissepiments rather thick and rigid; basidiospores ellipsoid or ovoid, often with a slightly truncate apex, hyaline, 7.5-9 x 4.5-6 μ ; chlamydospores (?) abundant on the hymenium and the hyphae of the context, subglobose to broadly ellipsoid, colorless or somewhat greenish or yellowish under the microscope, 7.5-9 x 6-7.5 μ or 6-7.5 μ in diameter; basidia large, pyriform, 9-10 μ in diameter; cystidia mixed with the basidia as pointed, narrow, flask-shaped organs 3-4 μ in diameter; hyphae of two kinds: (a) large hyaline, unstaining hyphae, often thick-walled, abruptly breaking up at one end into several to many smaller branches that gradually taper out to the extremity, 3-5 μ in diameter in the larger portions, lacking cross walls and clamps; (b) small deeply staining and much branched hyphae bearing at least some of the chlamydospores, with a few cross walls and clamps, diameter 2-3.5 μ . [PLATE 9, FIGS. 5 and 6; TEXT FIGS. 9-14.]

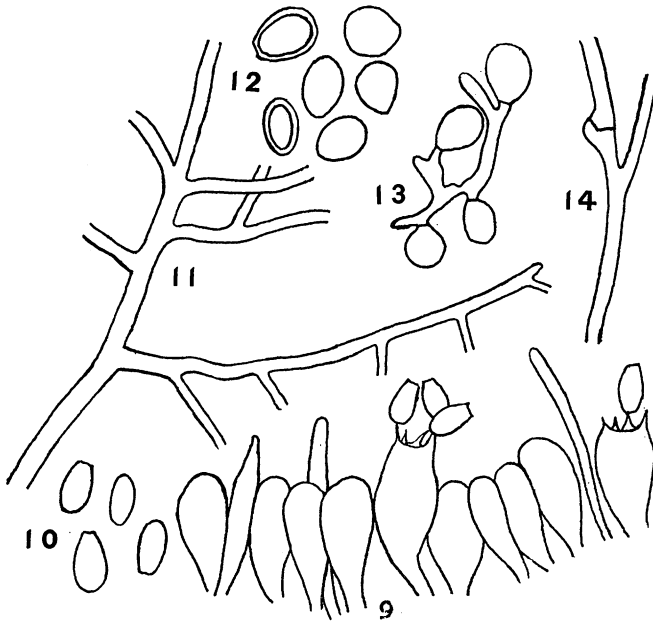
On dead standing trunks or on stumps of *Quercus*, especially *Q. alba*.

Specimens are at hand as follows, the first mentioned being designated as the type:

New Brunswick, New Jersey, on dead standing *Quercus alba*, August 25, 1920, *Overholts & West*, No. 7873; Lamar, Clinton County, Pennsylvania, on dead standing *Quercus alba*, July 26, 1920, *Overholts Herb.* No. 7525; State College, Pennsylvania, on oak stump, October, 1920, No. 7173; New Brunswick, New Jersey, on dead *Quercus alba*, August 21, 1918, *E. West* 343, No. 7584; New Brunswick, New Jersey, on dead standing oak trunks, June 16, 1919, *E. West* 414, No. 7526.

After this manuscript was submitted for publication, the specimens that had been previously designated as the types and from which the photographs for this article were made, were

destroyed by a fire that burned the photographic studio where the collection was kept at the time. This has necessitated designating my herbarium No. 7873, as the type of the species rather than No. 7525, from which the photographs were made, and which is therefore no longer in existence. This will explain any discrepancy that might appear in the failure, in later years, to find a collection in my herbarium with the exact aspect presented in the photographs.



FIGS. 9-14. *POLYPORUS COMPACTUS* Overholts

9. Small portion of the hymenium showing basidia, cystidia, and attached spores. 10. Mature basidiospores. 11. Branched hypha. 12. Chlamydospores. 13. Production of chlamydospores. 14. Hypha with clamp connection.

Of the collections here cited, only the first and the last named show basidia and basidiospores, while all bear the chlamydospore condition.

The real status of the so-called chlamydospore condition has not been determined, as no cultures have been attempted. That the knob-like growths as shown in PLATE 9 involve this species can scarcely be questioned. It has been suggested that these growths may represent a diseased condition and that the bodies here designated as chlamydospores may be in reality the spores

of the parasite. They are not produced in chains but formed singly as the termini of small hyphae deeply staining with eosin.

This fungus has been under careful observation for several years, but only the chlamydospore condition was known until 1920. A well-developed pileus is never present. In some respects the species shows resemblance to *P. Ellisianus* Murrill, which however is found on coniferous wood and has entirely different spores. The cushion-shaped or nodular type of sporophore, bearing only the chlamydospore condition, has the context more or less zoned and with a disagreeable odor as of strong lard.

11. FOMES BAKERI Murrill

I found this species to be quite common, by far the most common species of *Fomes*, in the vicinity of Kingston, New Jersey, where I observed it in company with Mr. E. West in August, 1920. Its only host in that locality is the river birch, *Betula nigra*, which is its host also in the Mississippi Valley. The species was described and illustrated in my notes for 1919, where reference was made to a collection said to have been taken from *Betula lutea* near Philadelphia in 1915 by Rhoads. In all probability the host for this collection was *B. nigra*, as *B. lutea* is not found in that locality, according to Dr. Rhoads.

In connection with this species it was of interest to find recently in the Schweinitz Herbarium at Philadelphia a specimen of *Fomes* under the name of *Polyporus annosus* Fr. (Syn. N. Am. Fungi No. 401) that is undoubtedly *F. Bakeri*, although it seems not to have been recognized by those who have worked over the Schweinitzian material in recent years. Lloyd once referred this specimen to *F. rimosus*, noting, however, its similarity to *F. robustus* Karst., which he has subsequently regarded as identical with *F. Bakeri*. This Schweinitzian collection bears no date but was made certainly prior to 1831 and was listed by Schweinitz as occurring on *Betula*.

12. PHALLOGASTER SACCATUS Morgan

A rare plant, placed in the *Phallaceae* by some largely on the foetid nature of the internal deliquescent gleba, but in appearance more allied to the Lycoperdaceae. Two specimens were collected at Westport, Pennsylvania, August 11, 1920. Excellent illustrations, by which the plant may readily be known, have been published by Lloyd.

Explanation of plate 9

FIG. 1, Enlarged photograph of a small area of the resin exudate on which *Zythia resinæ* (Ehrenb.) Karst. and *Biatorella resinæ* (Fr.) Mudd. grow side by side. The elongate bodies in the left hand corner are the pycnidia of the *Zythia*, while the larger disk-shaped bodies to the right are the apothecia of the *Biatorella*. Photographed with Micro-Tessar 10 \times lens, by E. T. Kirk.

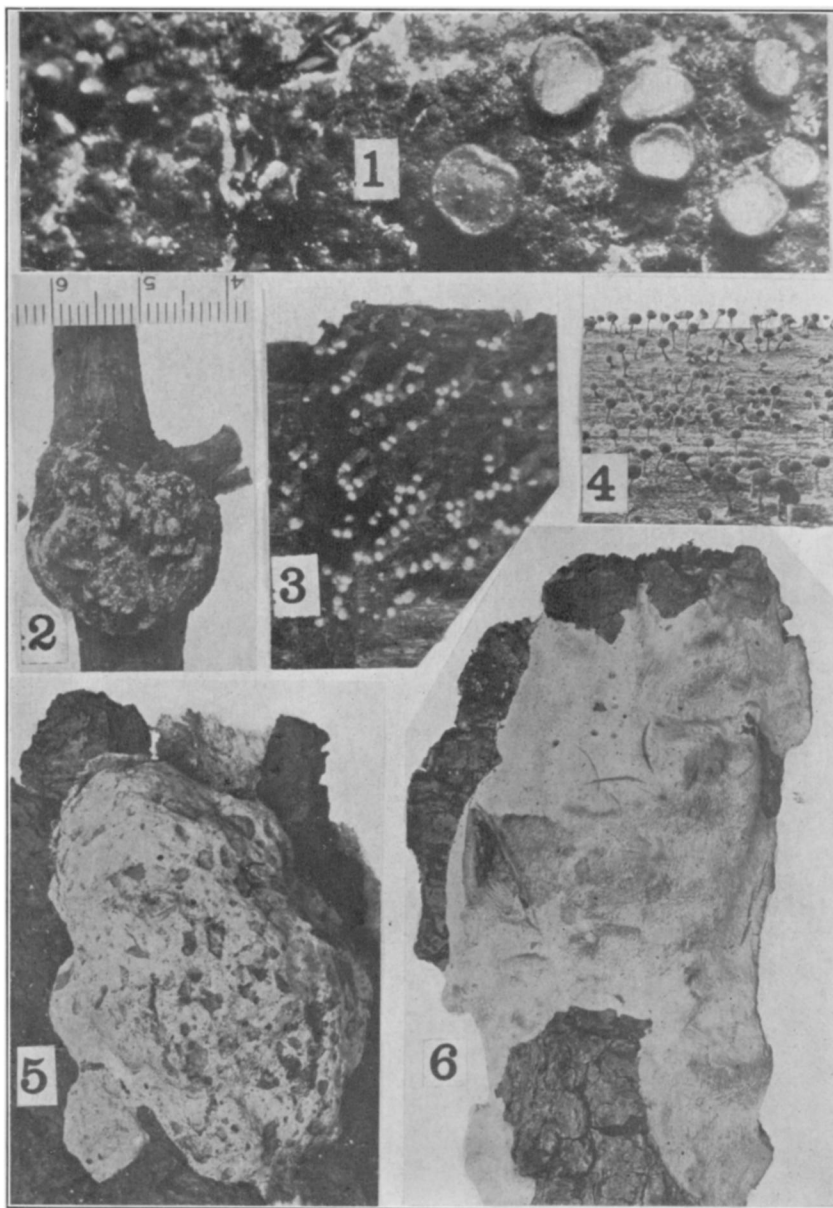
FIG. 2, Resin exudate inhabited by the pitch midge and bearing the fruiting bodies of *Zythia resinæ* and *Biatorella resinæ*, \times 1. Photo by the writer.

FIG. 3, *Solenia fasciculata* (Pers.) Fr., showing the isolated white-tipped cylinders in which the hymenium is produced. Photographed with Micro-Tessar 10 \times lens, by C. B. Neblette.

FIG. 4, *Pilacre Petersii* B. & Br., natural size, Photo by the writer.

FIG. 5, Rounded abnormal growth of *Polyporus compactus* Overholts, as usually found on vertical surfaces, and bearing only the chlamydospore condition, \times 1. Photo by the writer.

FIG. 6, Poroid form of *Polyporus compactus*, showing the largely resupinate manner of growth, \times 1. Photo by C. B. Neblette.



- 1, 2. *ZYTHIA RESINAE* (EHRENB.) KARST. AND *BIATORELLA RESINAE* (FR.) MUDD.
 3. *SOLENTIA FASCICULATA* (PERS.) FR.
 4. *PILACRE PETERSII* B. & BR.
 5, 6. *POLYPORUS COMPACTUS* OVERHOLTS